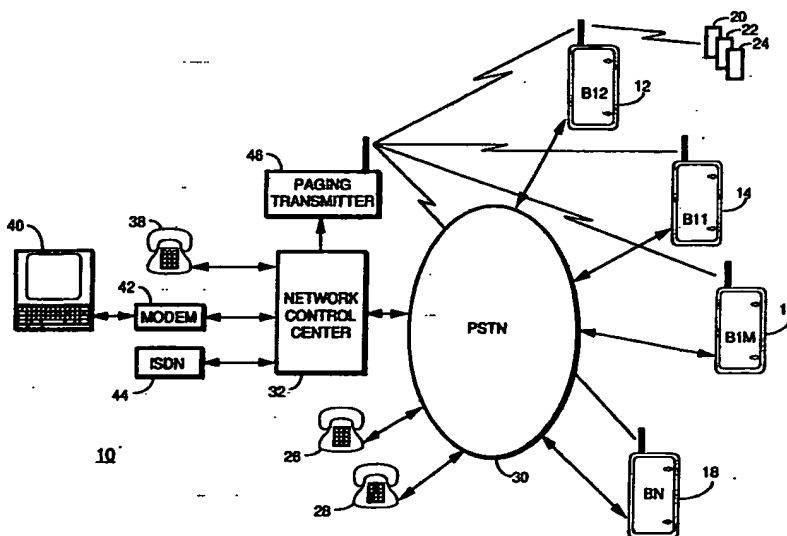




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(21) International Application Number: PCT/US92/04636 (22) International Filing Date: 5 June 1992 (05.06.92) (30) Priority data: 724,279 1 July 1991 (01.07.91) US (71) Applicant: MOTOROLA, INC. [US/US]; 1303 East Algonquin Road, Schaumburg, IL 60196 (US). (72) Inventors: BREEDEN, Robert, L. ; 22940 Greenview Terrace, Boca Raton, FL 33433 (US). BESSOM, Richard, E. ; 8264 Twin Lake Drive, Boca Raton, FL 33496 (US). (74) Agent: INGRASSIA, Vincent, B.; Motorola, Inc.-Intellectual Property Dept., 1500 N.W. 22nd Avenue, Boynton Beach, FL 33426-8292 (US).		(81) Designated States: CA, JP, KR, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, MC, NL, SE). Published <i>With international search report.</i>

(54) Title: PERSONAL COMMUNICATION SYSTEM PROVIDING SUPPLEMENTAL INFORMATION MODE

**(57) Abstract**

A personal communication system (10) comprises a plurality of transceiver stations (12, 14, 16, 18) providing voice communication capability between one or more portable radiotelephones (20, 22, 24) and a telephone network (30). One or more of the transceiver stations (12, 14, 16, 18) is further capable of storing a localized information data base and of transmitting the same in response to a request for such transmission being received from one of the portable radiotelephones (20, 22, 24) communicating therewith. The portable radiotelephone (20, 22 or 24) communicating therewith is capable thereafter of receiving at least a first portion of the transmitted localized information data base and of presenting the same to the radiotelephone subscriber.

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**PERSONAL COMMUNICATION SYSTEM
PROVIDING SUPPLEMENTAL INFORMATION MODE**

BACKGROUND OF THE INVENTION

5 FIELD OF THE INVENTION:

The present invention relates generally to the field of personal communication systems, and more particularly to personal radiotelephone communication systems.

10 DESCRIPTION OF THE PRIOR ART:

Personal communication systems have greatly enhanced and expanded telecommunications in the United States and throughout the world. Examples of such personal communications systems include both cellular communication
15 systems and cordless radiotelephone systems such as the CT-2 (second generation cordless telephone) and DECT (digital European cordless telephone) systems. The cordless telephone systems, in particular, have provided wireless communication access to the Public Switched Telephone
20 Network (PSTN) with the use of a plurality of fixed location telepoint base stations which have provided voice communication capability between a plurality of portable radiotelephone handsets and conventional telephone receivers. Because of the very low power outputs provided
25 in the portable radiotelephone handsets, as compared to a cellular portable transceiver, multiple telepoint base stations have had to be distributed throughout the different geographic coverage areas, such as in shopping malls, downtown shopping areas, airports, and other
30 locations, to provide the necessary range of coverage desired within the system. These coverage areas have provided isolated islands of coverage which have directly enhanced the telecommunications capability offered to the radiotelephone handset subscriber. However, in addition to
35 providing enhanced voice telecommunications capability, there is a need also to be able to provide data communication capability as well, which would further

enhance the total telecommunication capability provided to the handset subscriber in such personal communication systems.

5

SUMMARY OF THE INVENTION

A personal communication system comprises a plurality of transceiver stations providing voice communication capability between one or more portable radiotelephone handsets and a telephone network. One or more of the transceiver stations within the system are also capable of storing a localized information data base and of transmitting the data base in response to a request for such transmission being received from a portable radiotelephone handset communicating with the transceiver station. The portable radiotelephone handset is capable of receiving at least a first portion of the transmitted localized information data base and of presenting the same to the handset subscriber. The localized information data base includes information pertaining to the conduct of business for establishments located within the vicinity of the transceiver station.

A portable radiotelephone handset, for use in a personal communication system which includes a plurality of transceiver stations which have the capability to provide voice communication between the portable radiotelephone and a telephone network and the capability of storing and transmitting a localized information data base, comprises a means for generating and transmitting at least a first request to receive at least a first portion of the localized information data base stored within the transceiver station through which communication is established. A receiving means receives the portion of the localized information data base transmitted by the transceiver station and presents the portion of the localized information data base which was received to the handset subscriber.

A transceiver station in a personal communication system for providing voice communication capability between one or more portable radiotelephones and a telephone network, comprises a memory means for storing a localized information data base, a receiving means for receiving a request from one of the portable radiotelephones to transmit at least a portion of the localized information data base, and a transmitting means for transmitting the requested portion of the localized information data base to the handset subscriber.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an electrical block diagram of a personal communication system in accordance with the preferred embodiment of the present invention.

FIG. 2 is a pictorial diagram depicting the application of the localized information data base in accordance with the preferred embodiment of the present invention.

FIG. 3 is an electrical block diagram of the network control center in accordance with the preferred embodiment of the present invention.

FIG. 4 is a flow chart depicting the formatting of the localized information data base in accordance with the preferred embodiment of the present invention.

FIG. 5 is an electrical block diagram of the transceiver station in accordance with the preferred embodiment of the present invention.

FIG. 6 is a pictorial diagram depicting the portable radiotelephone in accordance with the preferred embodiment of the present invention.

FIG. 7 is an electrical block diagram of the portable radiotelephone in accordance with the preferred embodiment of the present invention.

FIGS. 8A - 8C are flow charts depicting the operation of the portable radiotelephone and the transceiver station

in accordance with the preferred embodiment of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

5 Referring to the figures, FIG. 1 is an electrical block diagram of a personal communication system in accordance with the preferred embodiment of the present invention. As shown in FIG. 1, a personal communication system 10 includes a plurality of transceiver stations 12, 10 14, 16 and 18 (of which four are shown) which are used to provide voice communication between one or more portable radiotelephones 20, 22 and 24 (of which three are shown) and conventional telephone handsets 26, 28 through the Public Switched Telephone Network (PSTN) 30. Examples of 15 such a personal communication system 10 which provides voice communication capability are well known in the art, and include such personal communication systems as the newer cordless radiotelephone systems such as the CT-2 (second generation cordless telephone) and DECT (digital 20 European cordless telephone) systems. In such cordless radiotelephone systems, voice communication is originated by one of the portable radiotelephone handsets, such as handset 20, which is in range of a transceiver station, such as a CT-2 telepoint base station 12. For purposes of 25 description, the description to follow will focus on a personal communication system, such as the CT-2 cordless radiotelephone system, although it will be appreciated that other forms of personal communication systems, such as other cordless telephone and cellular communication systems 30 can also provide the voice communication capability between a portable radiotelephone handsets, such as handset 20, and a transceiver station, such as a cellular or telepoint base station 12. Portable radiotelephone handsets suitable for use in a CT-2 systems are well known in the art, such as 35 the SILVERLINK™ 2000 Personal Telephone manufactured by Motorola Inc. Telepoint base stations suitable for use in a CT-2 systems are also well known in the art, such as the

SILVERLINK™ Telepoint Base Station manufactured by Motorola Inc. Such portable radiotelephone handsets and telepoint base stations provide voice communication utilizing the well known CT2/CAI communication protocol.

5 As calls are originated by the radiotelephone handsets, or portable radiotelephones, the calls are logged for billing purposes, among other things, by the telepoint base station, or transceiver station, through which the call is placed. Periodically, such as once a day, the call
10 information collected at each of the telepoint base stations 12, 14, 16 and 18 is transferred to a central control point, such as the network control center 32. One such network control center is the Motorola Network Control Center (MNCC) and Business Management and Billing System
15 (BMBS) for Public Telepoint Systems, which provides, among other things, automatic supervision of all system base stations and flexible billing cycles and automatic entry of recurring charges.

Unlike the prior art personal communication systems,
20 the personal communication system in accordance with the preferred embodiment of the present invention provides a means for collecting information pertaining to the conduct of business for establishments located within the vicinity of one or more of the telepoint base stations to generate
25 localized information data bases which are stored within each of those telepoint base stations which are equipped to provide localized information data base information to requesting radiotelephone handsets, as will be described in detail below. The entry of such localized information data
30 base information into the network control center 32 can be provided in any of a number of ways, such as through the use of conventional telephone handsets 38, through the use of computers or video displays terminals 40 which are coupled to the network control center 32 through the PTSN
35 using modems 42, or through an ISDN (integrated services data network) network 44, just to name a few. The nature and type of information provided for the localized

information data base will become more apparent in the description to follow.

Once the localized information data base information has been collected within the network control center 32, the information is distributed to the appropriate telepoint base stations 12, 14, 16 or 18, using preferably an RF transmission system, such as provided by paging transmitter 46 and a receiver located at the appropriate telepoint base stations. Other distribution methods, such as through the PSTN 30 could be utilized as well. Distribution of the localized information data base information will be described in greater detail below.

Reference is now directed to FIG. 2, which is a pictorial diagram depicting an application of the localized information data base in accordance with the preferred embodiment of the present invention. As stated above, personal communication systems, such as a CT-2 cordless telephone system provides wireless communication access to the PSTN in isolated islands of coverage, such as, but not limited to, shopping areas or malls 200 including restaurants and other places of business, spread throughout a geographic area or city, such as at Interstate Highway interchange 202, and in places providing public transportation, such as bus stations, railway stations and airports 204. Depending upon the location, access to the public switched telephone network may be through a single telepoint base station having but a single communication channel, such as at a highway interchange or other low traffic area, to multiple telepoint base stations employing multiple communication channels such as at an airport where the telepoint station would be distributed throughout the terminal and parking areas. As shown in FIG. 2, the localized information data base information, or entries, include information pertaining to the conduct of business for establishments located within the vicinity of a given telepoint base station. Examples of such localized information data base information includes service station

related information such as gas prices and station location, restaurant location and motel information at typical highway interchanges, such as Interstate Highway interchange 202. Examples of such localized information data base information further includes retail store sale information, movie guides and restaurant information, such as at shopping malls 200, or other shopping and entertainment districts. Still other examples of such localized information data base information includes airline departure or arrival information at airports 204. While the type of information described relates generally to the immediate vicinity of any particular telepoint base station, it will be appreciated other forms of information relating to the conduct of business, such as information on churches, police and fire, hospitals, and the like may include larger geographic areas beyond the immediate vicinity of any given telepoint base station.

FIG. 3 is an electrical block diagram of a network control center 300 in accordance with the preferred embodiment of the present invention. The network control center 300 includes a remote data entry port 302 which is utilized for the entry of information intended for the various localized information data bases throughout the personal communication network using such data entry devices as a telephone handset 38 or a computer or video display terminal 40. The remote entry data port 302 provides the required interface between the various remote entry devices and the network control center 300. The output of the remote entry data port 302 is coupled to a central controller 304, which is preferably microcomputer controlled using any of a number of well known microcomputer devices. Coupled to the central controller 304 are data entry devices, one of which is shown, such as a video display terminal 306. The data entry device 306 enables control of the personal communication system from the network control center 300, and entry of new subscriber numbers, or cancellation of old subscriber numbers from the

personal communication system. A memory 308, which may be random access memory (RAM), floppy or hard disk drive memory, or magnetic tape, or any combination thereof, provides a subscriber data base listing all active and inactive portable radiotelephones, call billing information collected periodically from the telepoint base stations, and in the preferred embodiment of the present invention a general data base containing the localized information data base information for each of the telepoint base stations throughout the personal communication system, as well as any associated billing information which may be derived therefrom. As shown, the localized information data base includes, but is not limited to, such data entries as the telepoint base station number, the specific location information, or localized information data base information associated with the particular telepoint base station, and where appropriate, time or date information which may indicate such information as the date the information was posted on the system, and the length of time, or end date after which the information is to be removed from the system. It will be appreciated, the entry of the localized information data base information may be either automatically or manually, as will be described in further detail below. When the localized information data base information is time stamped, or dated, a real time clock 310 is used in conjunction with the central controller 304 to control the automatic deletion of the localized information data base information, as well as to control such other system operations as call billing collection. The central controller 304 couples to a telephone interface 312 which couples the network control center 300 through the public switched telephone network 30 to the individual telepoint base stations, such as base station 18, located throughout the personal communication system. The central controller 304 also couples to the input of paging port 314. The output of paging port 314 is coupled to paging

transmitter 46 which is used to distribute the localized information data base, as described below.

FIG. 4 is a flow chart depicting the entry and formatting of the localized information data base in accordance with the preferred embodiment of the present invention. The establishment wishing to place information into the localized information data base places a call the the network communication center (NCC), at block 402 which functions as a means for collecting the information pertaining to the conduct of business. The call may be originated as described above using a telephone handset or computer or video display terminal over the public switched telephone network, or over an integrated services data network (ISDN). The establishment provides the information which is to be presented, which may include the establishment's name and location, any advertisement information, the merchandising area or area for which data distribution is to be provided, and any time related information, such as the length of time the information is to be available, at block 404. The information is formatted by the central controller which functions as a means for formatting the localized information data base for storage in the network control center memory together with the designated telepoint base station information, at block 406, and stored in memory, at block 408. The localized information data base information is then, at predetermined time intervals such as daily, transmitted using the paging transmitter or public switched telephone network to the designated base stations, at block 410. The designated base stations receive the localized information data base information intended for that station, at block 412 using any of a number of well known data transmission and receiving device selection protocols, such as the POCSAG or Golay Sequential Code signalling protocols for RF paging transmissions, or the X.25 communication protocol for communication over the public switched telephone network. The telepoint base station, after receiving the

localized information data base information, stores the information in the base station memory as will be described in detail below, at block 414, and the transmits the requested localized information data base information to
5 portable radiotelephones communicating therewith, as will be described below, at block 416.

FIG. 5 is an electrical block diagram of the telepoint base station, or transceiver station 500, in accordance with the preferred embodiment of the present invention.
10 The telepoint base station 500, includes a microprocessor controller 502 which controls the overall operation the the telepoint base station 500 regarding voice communication between the telepoint base station and the portable radiotelephones in a manner well known in the art. Calls
15 originated by a portable radiotelephone handset, such as handset 20, are received by one of the RF transceivers 504, or the RF transceiver in single transceiver telepoint base stations. The calls are coupled through codec 506 which processes the information in a manner well known in the art
20 to provide an analog voice output which is coupled to telephone interface 508 under the control of the microprocessor controller 502. The outbound call is coupled from the telephone interface 508 through the public switched telephone network to the telephone handset 26, 28
25 to which the call is directed. The inbound call responses are directed from the telephone handset 26, 28 through the public switched telephone network to the telephone interface 508, which couples the inbound call response to the codec 506 which then converts the analog voice
30 information into digital information for transmission under the control of microprocessor controller 502. The digitized call response is coupled to the RF transceiver 504 for transmission to the portable radiotelephone handset 20 originating the call. A data base memory 510 which is
35 coupled to the microprocessor controller, stores such information as an active/inactive subscriber data base as

well as the information related to billing of call placed through the telepoint base station 500.

Unlike the prior art telepoint base stations, the telepoint base station in accordance with the preferred embodiment of the present invention includes a remote data entry port 512 which is coupled to the microprocessor controller 502. The localized information data base information which is transmitted from the network control center is received at the telepoint base station 500 through antenna 514 which is coupled to receiver 516. Receiver 516 processes the received information in a manner well known in the art, to provide at the output a stream of digital information corresponding to the received localized information data base information which includes also address information specifying the telepoint base station to which the localized information data base information is directed. The received address information is processed in a manner well known in the art by the microprocessor controller 502 which functions as an address decoding means. When the received address corresponds to the address assigned to the telepoint base station, the corresponding localized information data base information is stored in the data base memory 510 under the control of the microprocessor controller 502.

In addition to the transmission of information from the network control center, localized information data base information can also be directly entered into the telepoint base station 500 through the remote entry data port 512. When localized information data base information is directly entered, such as through the use of a TOUCH-TONE™ telephone handset 518 or a computer or video display terminal 520, the microprocessor controller 502 controls the reception and storage of the information into the data base memory 510. In this instance, the microprocessor controller 502 provides a means for directly collecting the information pertaining to the conduct of business for the establishments located within the vicinity of the telepoint

base station, enabling the generation of the localized information data base at the telepoint base station 500. Such direct entry of localized information data base information is especially useful in such geographic areas as in airports, where the airlines directly control the ever changing arrival and departure information. Other geographic areas, such as in shopping malls could also route the localized information data base information through a central collection point, such as the mall managers office, who would then be responsible for posting the localized information data base to the telepoint base stations located throughout the mall.

FIG. 6 is a pictorial diagram depicting a preferred embodiment of the portable radiotelephone 600 in accordance with the preferred embodiment of the present invention. The portable radiotelephone 600 includes an eighteen key keyboard 602 which includes ten digit keys and eight function keys. The function keys include the conventional asterisk (*) and pound (#) keys, a unit power selection key 604, a shift key 606, memory recall/store key 608, intercom/page key 610, redial/public-private selection key 612, and a call activation (phone) key 614. Secondary key functions are selectable using the shift key 606. A liquid crystal (LCD) display 616, which utilizes preferably twelve numeric digits, provides display of the selected telephone number. A row of display indicators 618 is also provided which indicate which of a number of preselected functions are active, such as BUSY, public (PUB), private (PRIV), DATA, VOICE and unit power on (PWR). Several function annunciators (not displayed) are also provided. In particular, the VOICE indicator indicates when the portable radiotelephone is in the voice mode for conventional telephone conversations, whereas the DATA indicator indicates when the portable radiotelephone has been placed in the data mode for reception of selected localized information data base information. Selection of the voice and data modes is controlled by the shift key 606 and the

DATA/VOICE mode selection switch 620. The dual keystroke selection prevents inadvertent mode alteration, thereby insuring voice or data mode calls are not inadvertently interrupted.

5 The portable radiotelephone 600 includes an earpiece 622 located in the keypad section 626 and a mouthpiece 624 located in the hinged keyboard cover section 628. Also within the hinged keyboard cover section 628 is a second liquid crystal (LCD) display 630 which provides preferably
10 eight lines by thirty-two alphanumeric characters for display of the localized information data base information, or entries. It will be appreciated that other display formats and character sizes can be utilized as well, depending upon the amount of information which is to be
15 displayed at any given time. A typical "directory" level display is shown on LCD display 630, and includes such directory entries as "area shopping guide", "movie guide", "local attractions" guide, "restaurant guide", "medical services" directory, "service station" directory, "church"
20 directory, and "arts and entertainment" guide. The "directory" level display is typical of a first portion of the localized information data base which would be transmitted upon request to the portable radiotelephone. Cursor keys 632, 634, 636 and 638 enable the portable
25 radiotelephone subscriber to select from particular categories which are representative of the telepoint base station geographic location, and which can vary from telepoint base station to telepoint base station in located different geographic areas. In particular, cursor keys 632
30 and 634 enable movement up and down within the directory or menu. Cursor keys 636 and 638 enable movement within a particular menu item, such as would be required when reading a lengthy message. As each menu, or level, of information is received from the telepoint base station,
35 particular information can be saved within the portable radiotelephone using the "SAVE" key 640. The "SELECT" key initiates each data communications session with the

telepoint base station when the DATA mode is selected, and further enables the recovery of selected localized information data base information, when the portable radiotelephone is in the voice mode, thereby allowing
5 retrieval and review of information which has been received and stored while the portable radiotelephone was in range of a telepoint base station, as will be described below.

In summary, the portable radiotelephone enables the subscriber to request localized information data base
10 information from a telepoint base station with which communication is established. The information when received is displayed and can be stored for retrieval at a later time, thereby enabling the portable radiotelephone subscriber to obtain information when in range of a
15 telepoint base station, and thereafter review the information on an as needed basis while the subscriber is in the geographic area covered by the received information.

FIG. 7 is an electrical block diagram of the portable radiotelephone 600 in accordance with the preferred
20 embodiment of the present invention. The portable radiotelephone 600 includes an RF transceiver 650 which is coupled to an antenna 652 for transmitting and receiving voice and data information. The RF transceiver is synthesized to enable the selection of one of the forty
25 communication channels assigned to the CT-2 system. Selection of the channel of operation is controlled by the microprocessor controller 654, such as implemented using an MC 68HC05 microcomputer manufactured by Motorola, which also enables the codec 656 for encoding the analog voice
30 information derived from audio mouthpiece transducer 658 into the digital format, and the decoding of the digitally encoded voice information into an analog format for delivery by the audio earpiece transducer 658. A memory
660, such as a random access memory (RAM) or electrically
35 erasable programmable read only memory (EEPROM) stores such information as often used phone numbers in a phone number directory file, and the localized information data base

information which was received and stored, as described above. A real time clock 662 is coupled to the microprocessor controller 654 and enables such functions as automatic deletion of localized information data base information as was described above. A numeric display 664, as described above, is coupled to the microprocessor controller 654, and provides for displaying telephone numbers, and other information relative to the operation of the portable radiotelephone. A numeric/function keypad 666, as described above, is coupled to the microprocessor controller 654, and enables entry of phone numbers, and control of the operation of the portable radiotelephone, including such functions as the selection of voice or data modes of operation. An alphanumeric display, as described above, is also coupled to the microprocessor controller 654, and provides display of the selected localized information data base entries. An alphanumeric keyboard 680 can also be provided which is coupled to the microprocessor controller which would allow the portable radiotelephone subscriber to enter specific alphanumeric information which could be utilized to select information to be transmitted from the telepoint base station, or which could be used in the retrieval of information stored in the device memory 660.

FIGS. 8A - 8C are flow charts depicting the operation of the portable radiotelephone and the transceiver station in accordance with the preferred embodiment of the present invention. In particular, referring to FIG. 8A, when the portable radiotelephone subscriber turns the unit power on, at step 800, the microprocessor controller is initialized, at step 802. Initialization includes selection of the voice mode of transmission, in which instance, the numeric display indicator indicates the voice mode is selected, at step 804. When the data mode is not selected, at step 806, and the "phone" key is actuated, at step 808, the handset establishes a link with the telepoint base station using the well known CT2 MUX1 signaling protocol, at step 810.

The handset next transmits the well known MUX2 signaling protocol, at step 812 indicating a voice mode request is being made, which is received and processed by the telepoint base station, at step 814. Upon completion of
5 the voice mode log-on procedure, the portable radiotelephone and the telepoint base station switch to the well known MUX3 signalling protocol, at step 816, to enable voice communication in a manner well known in the art.

However, when the data mode is selected, by actuating
10 the "shift" key followed by the "data/voice" key, at step 806, the numeric display indicators indicates the data mode is selected, at step 818. When the data mode is selected, and the "phone" key is actuated, at step 820, the handset establishes a link with the telepoint base station, at step
15 822, using the MUX1 signaling protocol as described above. The handset next transmits a modified MUX2 signaling protocol, at step 824, indicating a data mode request is being made, which is received and processed by the telepoint base station, at step 826. Upon completion of
20 the data mode log-on procedure, the portable radiotelephone and the telepoint base station switch to a further modified MUX2 signaling protocol, at step 828, to enable data communication as described above, and will be further described below.

25 Referring to FIG 8B, when the data mode is selected and the portable radiotelephone has established communication with the telepoint base station, the telepoint base station transmits the "directory" or "menu" information as described above, at step 830. It will be
30 appreciated that where only a limited amount of information is required to be transmitted, the first display screen, or "menu" screen may include all the information associated with the particular telepoint base station. The handset receives and stores the "menu" information, at step 832,
35 and displays the "menu" information for the portable radiotelephone subscriber, at step 834. An example of a

representative "menu" information screen is presented in Table I below.

Table I

5

- 1 AREA SHOPPING GUIDE
- 2 MOVIE GUIDE
- 3 LOCAL ATTRACTIONS
- 4 RESTAURANT GUIDE
- 5 MEDICAL SERVICES
- 6 SERVICE STATIONS
- 7 CHURCHES
- 8 ARTS AND ENTERTAINMENT

10

- 15 When the "phone" key is not actuated, at step 836, and the subscriber selects one of the "menu" items, at step 838, using the cursor keys, the handset transmits an indication of the "menu" item selected, at step 840. The telepoint base station receives and processes the selected "menu" item, at step 842, and proceeds to transmit the selected "menu" item to the portable radiotelephone, at step 844. The handset then receives and displays the selected "menu" item, at step 846.

25

Table II

ORANGE BLOSSOM MALL HIGHLIGHTS
SHEARS & SAWBUCK >
LORD TAYLOR'S >
MAZZIES >
PENNIES >
CAROL'S BOUTIQUE >
JEANS N' THINGS >
NEXT SCREEN

30

35

The subscriber can review the selected "menu" item, at step 848. As shown in TABLE II, a continuation character

(>) can be provided which indicates additional information has been received which can be reviewed using the additional cursor keys, as described above. The subscriber can elect to save the received "menu" item, at step 850, by
5 depressing the SAVE key. When the SAVE key is depressed, the selected menu item which is currently being displayed is stored in the memory, at step 852.

After the subscriber has elected to save the selected "menu" item, at step 850, or after a predetermined time-
10 out, the handset reverts to the "menu" information display, at step 854. The subscriber can then depress the "phone" key, at step 836, thereby terminating the communication with the telepoint base station, at step 856, or can select another "menu" item, at step 838. When another "menu" item
15 is selected, at step 838, steps 840 through 854 are repeated to receive the next selected "menu" item. In this manner, as many "menu" items can be selected and saved by the subscriber, as the subscriber desires to receive. When the data call is terminated, at step 856, the
20 microprocessor controller returns to the voice mode of operation, as indicated in FIG. 8A, and the numeric display indicator indicates the voice mode is selected, at step 804. Independent of the mode of operation selected, when any key is actuated, at step 830, other than the "phone"
25 key at steps 808 or 820, the operation continues as shown in FIG 8C. When the key depressed is the SELECT key, at step 856, the "menu" information is retrieved and displayed, at step 858. The subscriber can then select a "menu" item, at step 860, using the cursor keys as
30 described above. When the SELECT key is depressed, at step 862, the date field is evaluated, when present, at step 864. When the date field indicates the "menu" item information is out-of-date, i.e. the current real time clock date is later than the date stored in the date field,
35 at step 864, the subscriber is alerted that the "menu" item information is out of date, at step 866, and the out-of-date "menu" item is deleted from memory, at step 868, after

which the "menu" information is again retrieved and displayed, at step 858. It will be appreciated that in the alternate, the "menu" item information can be displayed for the subscriber to review prior to deleting the out-of-date "menu" item information.

When the date field is present and the date information is current, or the date field is absent, at step 864, the controller determines whether the "menu" item selected is stored, at step 870. When the "menu" item is stored, at step 870, the "menu" item is recalled from memory and displayed, at step 874. A display timer is set following the selection of the "menu" item at step 870. When the "menu" item is not stored in memory after being selected at step 870, a message, such as "menu item not available" is displayed. Following the time-out of the display timer at step 876, program control returns to either steps 856 or 878. When the SELECT key is again depressed at step 856, steps 858 through 876 are again repeated, as described above. When a function key other than the SELECT key is actuated, at step 878, the function associated with the selected function key is performed at step 880. Program control then returns to step 804, and continues as described above.

In summary, a personal communication system for collecting and distributing information pertaining to the conduct of business for establishments located within the vicinity of the transceiver station was described above. The portable communication system utilizes portable radiotelephones having a selectable data mode of operation. When the data mode of operation is selected, the localized information data base information is selectively transmitted from the telepoint base station to which the portable radiotelephone has established communication. The received information can be stored within the portable radiotelephone for recall at a later time. The information can also be dated, or "time stamped", thereby enabling alerting the subscriber of recalled information which is

out-of-date, or "stale". The particular type of localized information data base information stored at any particular telepoint base station can be customized to include establishments only within the immediate vicinity of the telepoint base station, such as that of service stations, restaurants and motels, or where no establishments are located within the immediate vicinity of the telepoint base station, may also provide information of a less immediate, or more regional nature, such as that of lists of doctors, churches, public safety groups, etc. The localized information data base information can include such information as the location of the establishments, or other information pertaining to the establishments, such as operating hours, sales information, or other information of interest to the portable radiotelephone subscriber.

CLAIMS

1. A personal communication system comprising:
a plurality of transceiver stations providing voice
communication capability between one or more portable
5 radiotelephones and a telephone network,
one or more of said transceiver stations being further
capable of storing a localized information data base and of
transmitting the same in response to a request for such
transmission being received from one of said portable
10 radiotelephones communicating therewith,
said portable radiotelephone communicating therewith
being capable thereafter of receiving at least a first
portion of the transmitted localized information data base
and of presenting the same.
15
2. The personal communication system according to claim
1, wherein said transceiver station is a telepoint
radiotelephone base station.
- 20 3. The personal communication system according to claim
1, wherein said transceiver station is a cellular
radiotelephone base station.
4. The personal communication system according to claim
25 1, wherein said transceiver stations are geographically
located, and wherein said localized information data base
includes information pertaining to the conduct of business
for establishments located within the vicinity of said one
or more transceiver stations which are capable of storing
30 the localized information data base.
5. The personal communication system according to claim
4, further comprising a central control station comprising:
means for collecting the information pertaining to the
35 conduct of business for establishments located within the
vicinity of said one or more transceiver stations to
generate the localized information data base;

means for formatting the localized information data base with address information identifying selected ones of said plurality of transceiver stations; and

5 means for transmitting the formatted localized information data base to said selected transceiver stations.

6. The personal communication system according to claim 5, wherein said plurality of transceiver stations are
10 capable of receiving the formatted localized information data base, and wherein said transceiver stations comprise:

means for receiving a transmitted formatted localized information data base;

15 address decoding means, responsive to the received address information, for selectively receiving the localized information data base; and

memory means, responsive to said address decoding means, for storing said localized information data base received.

20

7. The personal communication system according to claim 4, wherein said transceiver stations further comprise:

25 means for collecting the information pertaining to the conduct of business for the establishments located within the vicinity of said transceiver station to generate the localized information data base; and

memory means, responsive to said collecting means, for storing the localized information data base generated.

30 8. The personal communication system according to claim 1, wherein said portable radiotelephone comprises:

35 means for generating and transmitting the request to receive at least the first portion of the localized information data base stored within the transceiver station through which communication is established;

receiving means for receiving the portion of the localized information data base transmitted by the transceiver station; and

5 presentation means for presenting the portion of the localized information data base which was received.

9. The portable radiotelephone according to claim 8, wherein said presentation means provides a visual display of the the portion of the localized information data base
10 received.

10. A portable radiotelephone for use in a personal communication system which includes a plurality of transceiver stations to provide voice communication between the portable radiotelephone and a telephone network, the
5 transceiver stations further being capable of storing and transmitting a localized information data base, said portable radiotelephone further comprising:

means for generating and transmitting at least a first request to receive at least a first portion of the
10 localized information data base stored within the transceiver station through which communication is established;

receiving means for receiving the portion of the localized information data base transmitted by the
15 transceiver station; and

presentation means for presenting the portion of the localized information data base which was received.

11. The portable radiotelephone according to claim 10,
20 wherein said presentation means provides a visual display of the the portion of the localized information data base received.

12. The portable radiotelephone according to claim 11,
25 further comprising:

memory means; and

switch means, responsive to said presentation means, for effecting the storage of the portion of the localized information data base which was received and displayed.

30

13. The portable radiotelephone according to claim 12 further comprising means for recalling the localized information data base stored.

14. The portable radiotelephone according to claim 12,
wherein the localized information data base stored
comprises a plurality of localized information data base
entries, and further comprises date information entries
5 associated with selected localized information data base
entries, and wherein the portable radiotelephone further
comprises:
- timing means, for generating time signals;
 - comparing means, for comparing the stored date
10 information with the time signals; and
 - means, responsive to said comparing means, for
deleting the localized information data base entry stored
corresponding to the date information.
- 15 15. The portable radiotelephone according to claim 14,
further comprising means for generating a sensible alert in
response to the localized information data base entry which
was stored being deleted.

16. A transceiver station in a personal communication system for providing voice communication capability between one or more portable radiotelephones and a telephone network, said transceiver station further comprising:

5 memory means, for storing a localized information data base;

 receiving means, for receiving a request from one of said portable radiotelephones to transmit at least a portion of the localized information data base; and

10 transmitting means, for transmitting the requested portion of the localized information data base.

17. The transceiver station according to claim 16, wherein the localized information data base stored comprises a
15 plurality of localized information data base entries, and further comprises date information entries associated with selected localized information data base entries, and wherein said portion of the localized information data base transmitted includes the localized information data base
20 entry and the associated date information entry.

18. The transceiver station according to claim 16, further comprising:

25 means for receiving a transmitted formatted localized information data base from a central control station, the formatted localized information data base including address information identifying the transceiver station to which the localized information data base is directed;

30 address decoding means, responsive to the transmitted address information, for selectively receiving the localized information data base; and

 memory means, responsive to said address decoding means, for storing said localized information data base.

19. The transceiver station according to claim 16, wherein said transceiver station is geographically located, and wherein said localized information data base includes information pertaining to the conduct of business for
5 establishments located within the vicinity of said transceiver station.

20. The transceiver station according to claim 19, further comprising means for collecting the information pertaining
10 to the conduct of business for the establishments located within the vicinity of said transceiver station to generate the localized information data base.

1/10

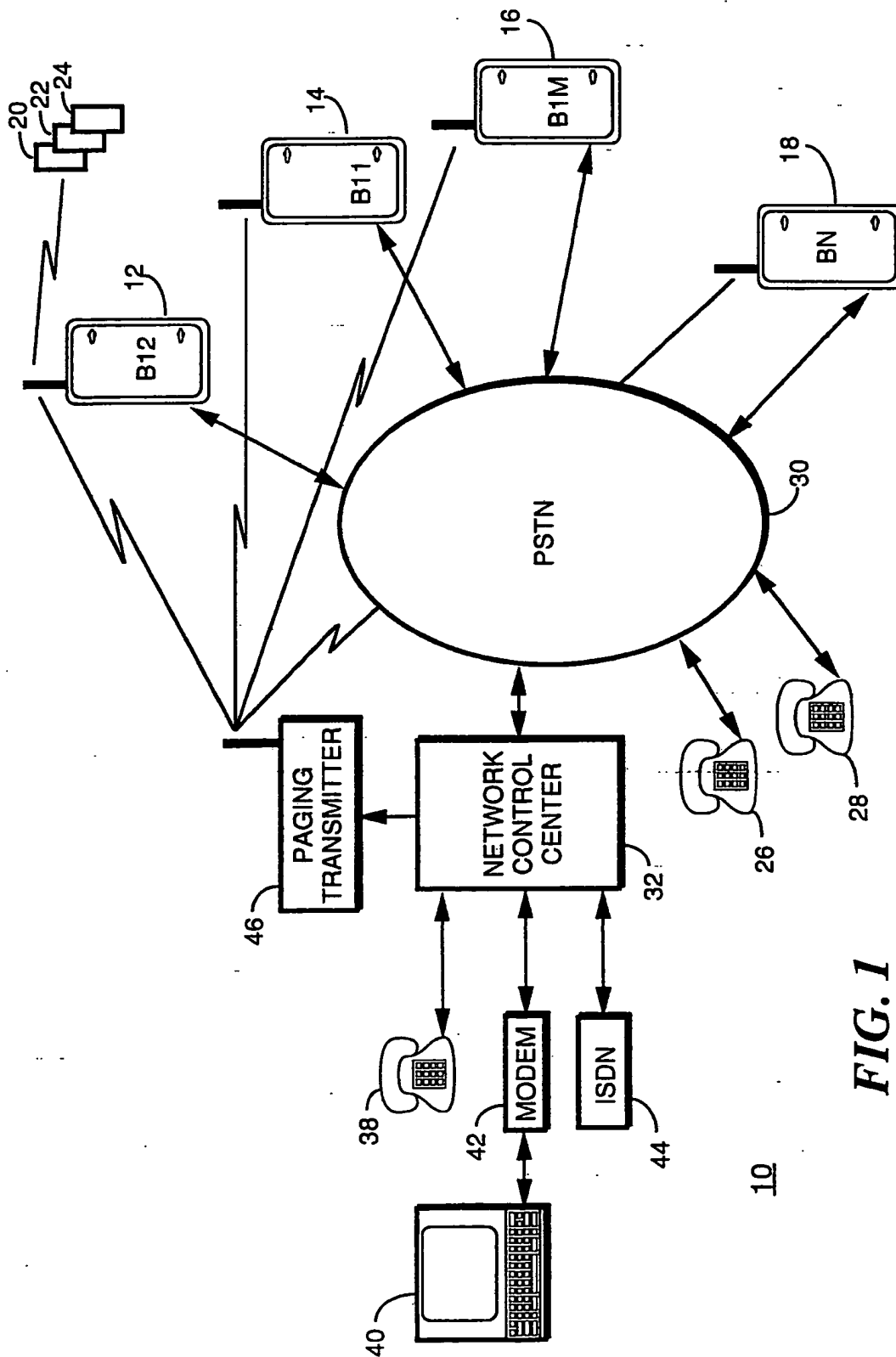


FIG. 1

2/10

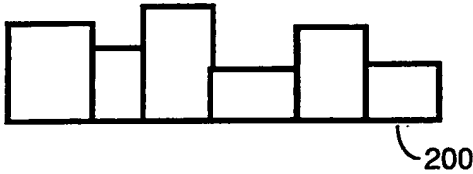
AIRPORT

DEPARTURES				
FLIGHT	CITY	TIME	GATE	
DL 605	NEW YORK	7:35	B11	
DL 890	DETROIT	7:50	B15	
DL 940	DALLAS	8:30	B1	
UA 34	ORLANDO	8:45	A12	



SHOPPING AREA

MACY'S: WHITE SALE 25% OFF
 S. PAVILLION: ANTIQUE EXHIBIT
 PEACHES: TWO FOR ONE SALE
 TWIN CINEMA: DIE HARD FIVE
 LE TWIT: LUNCH SPECIAL \$4.95



HIGHWAY EXIT

GULF 1.04 1.15 1.23 1 BLK E
 SHELL 1.02 1.11 1.19 1/2 MI W
 TEXACO 1.05 1.13 1.22 1 BLK W
 DENNY'S LUNCH \$2.95 2 BLK E
 MARRIOTT \$49 DBL 4 BLK E

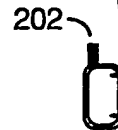


FIG. 2

3/10

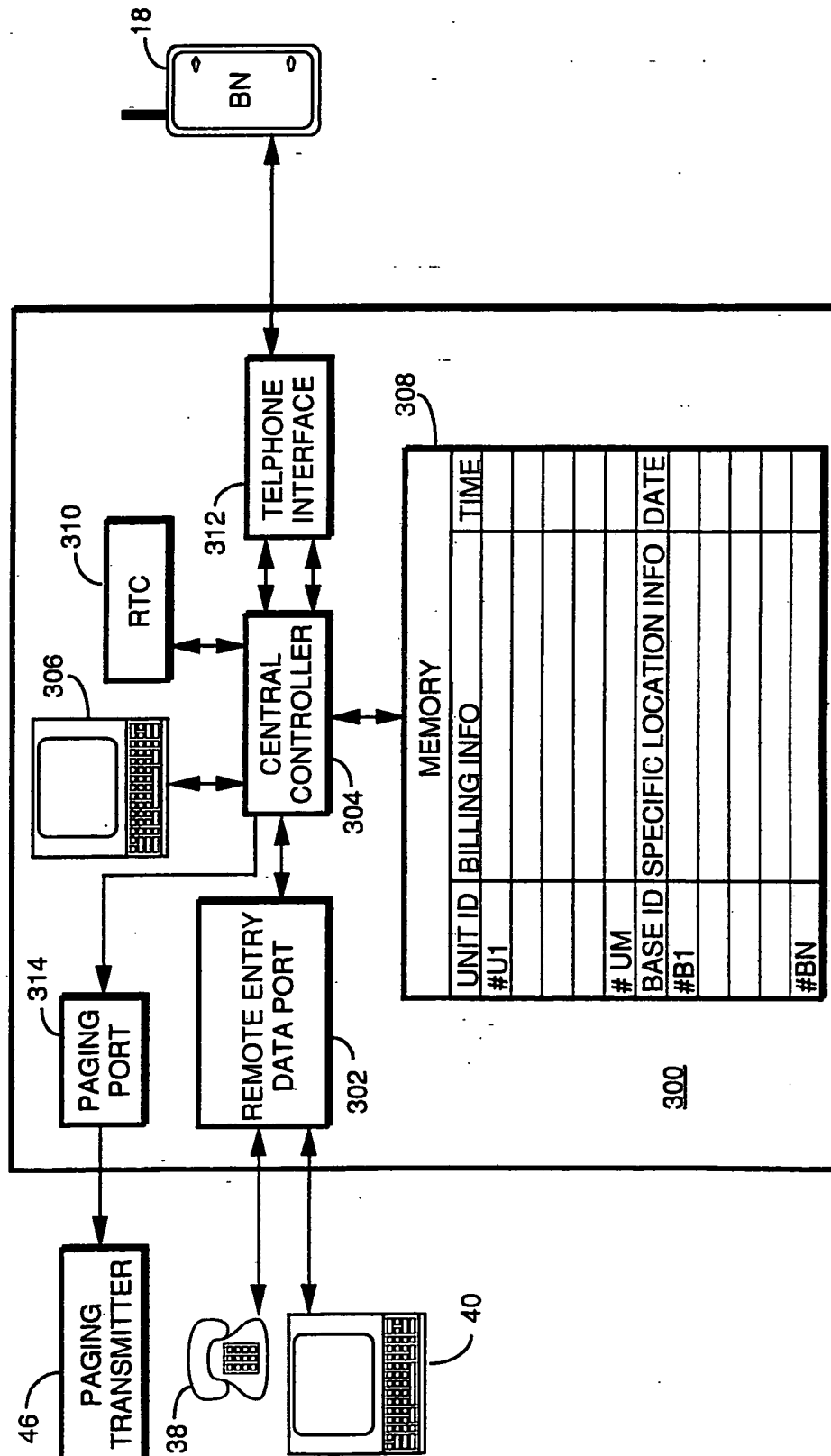
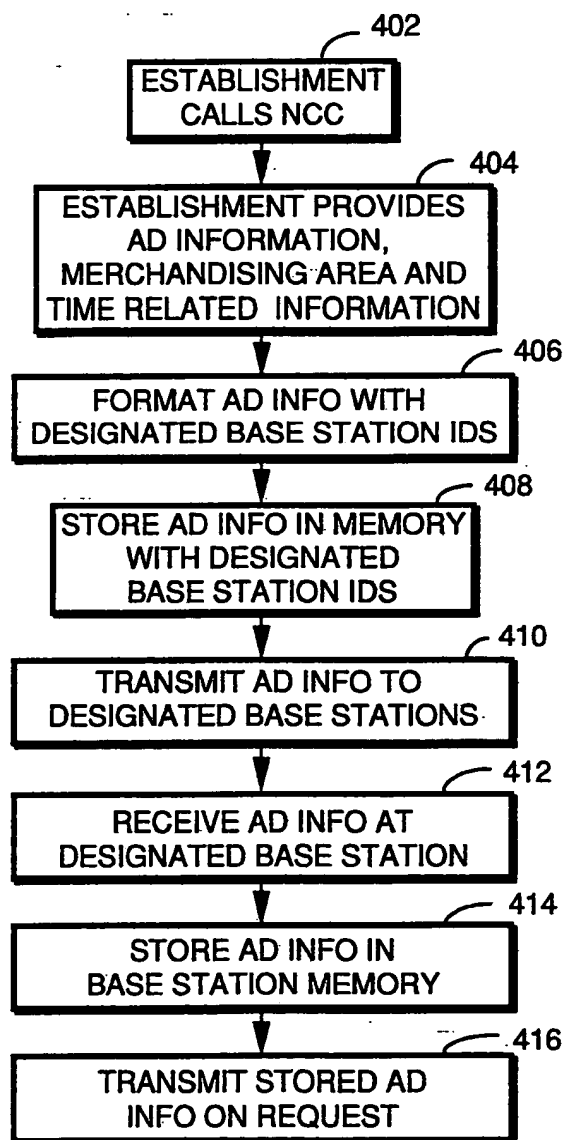


FIG. 3

4/10

**FIG. 4**

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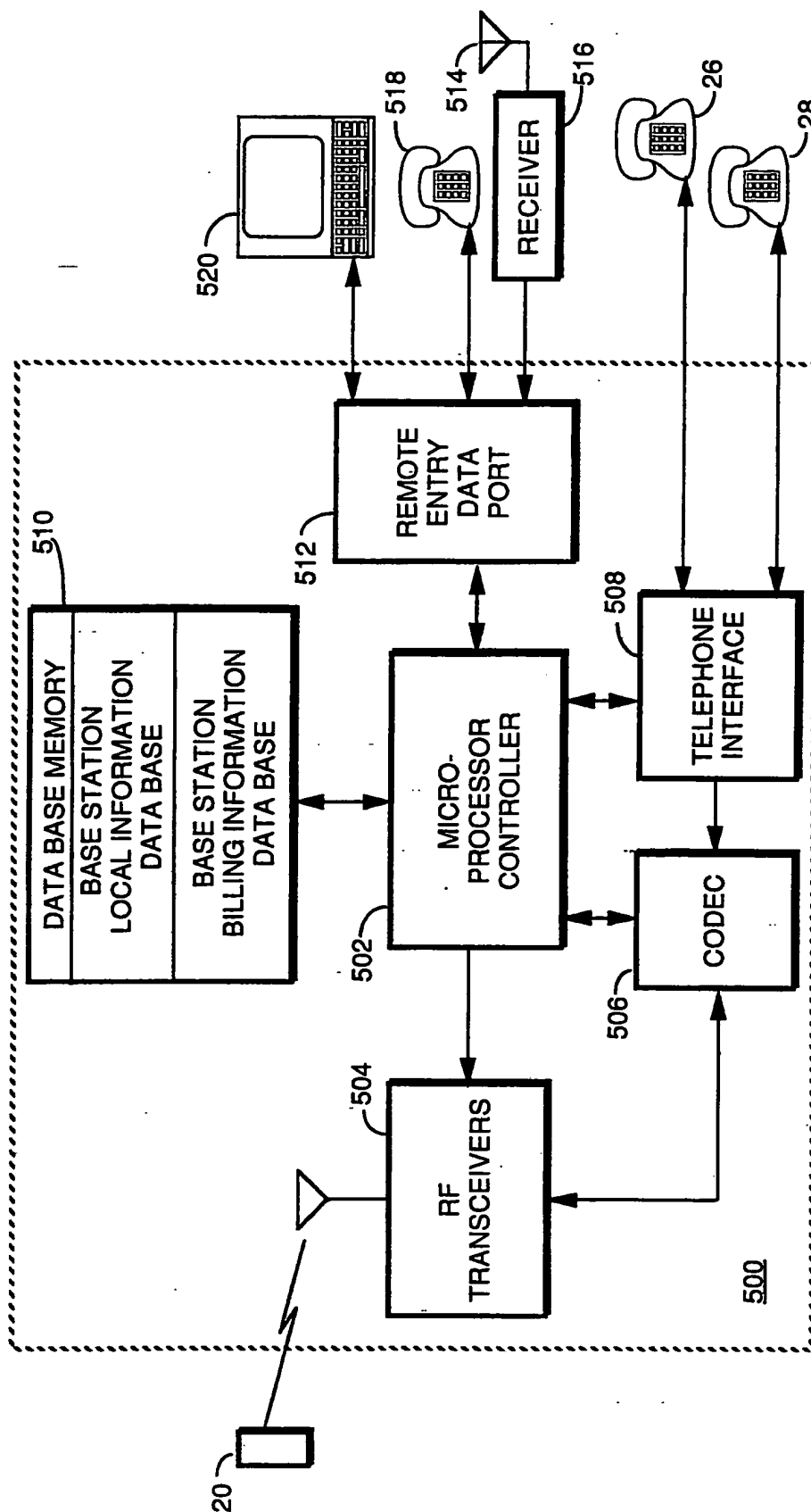


FIG. 5

6/10

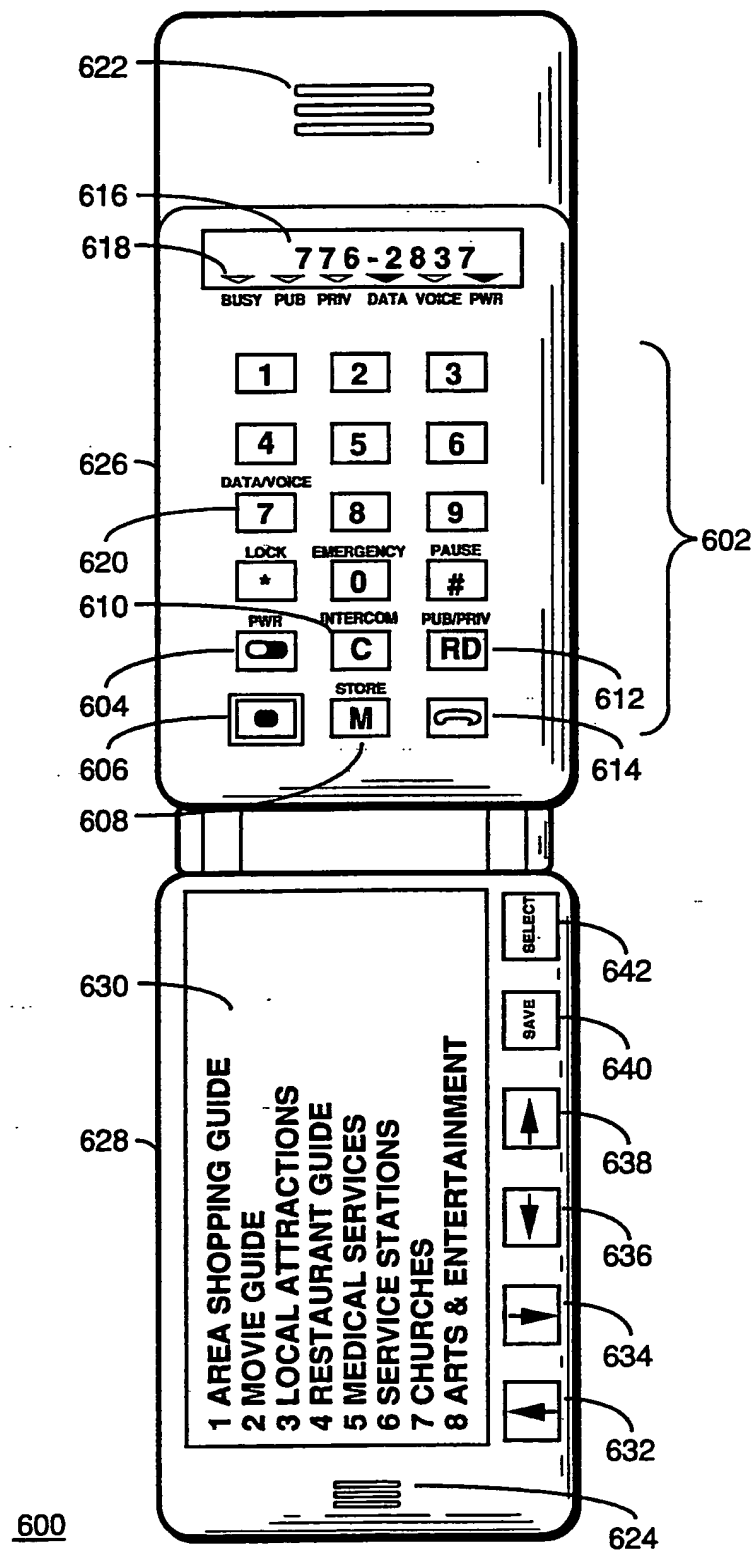
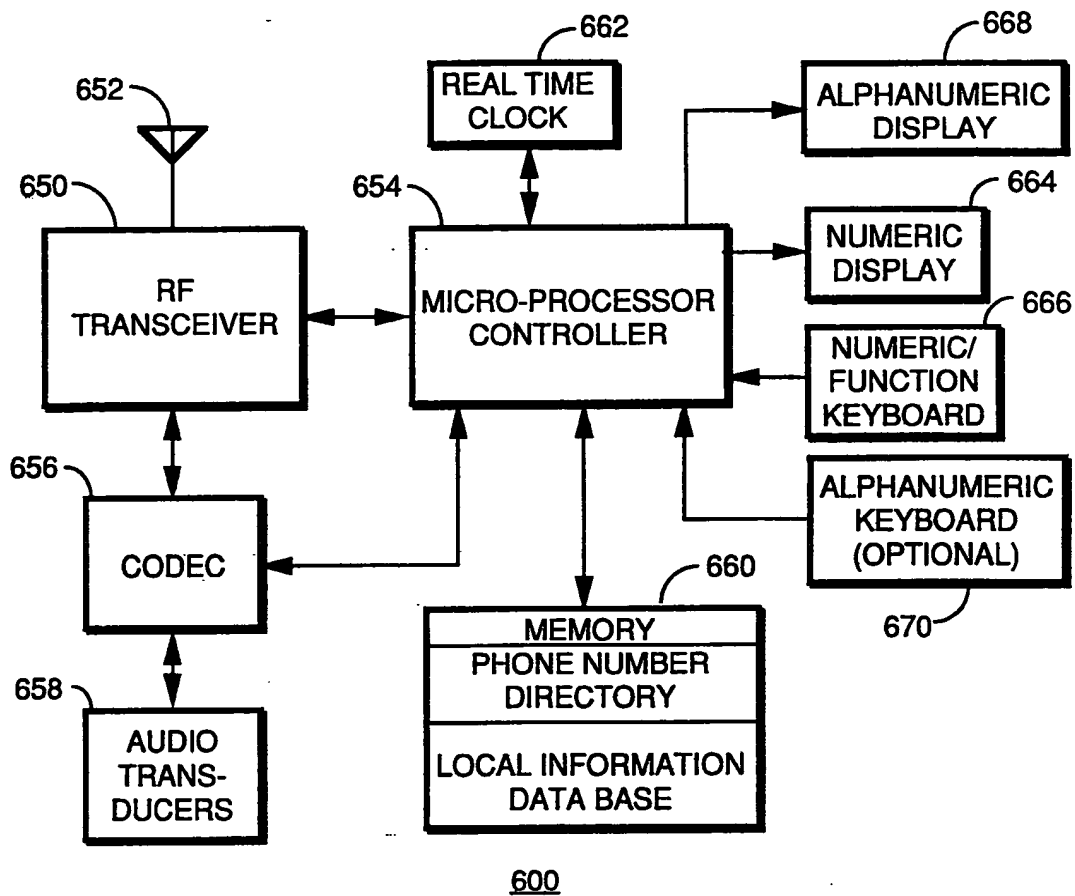


FIG. 6

7/10

**FIG. 7**

8/10

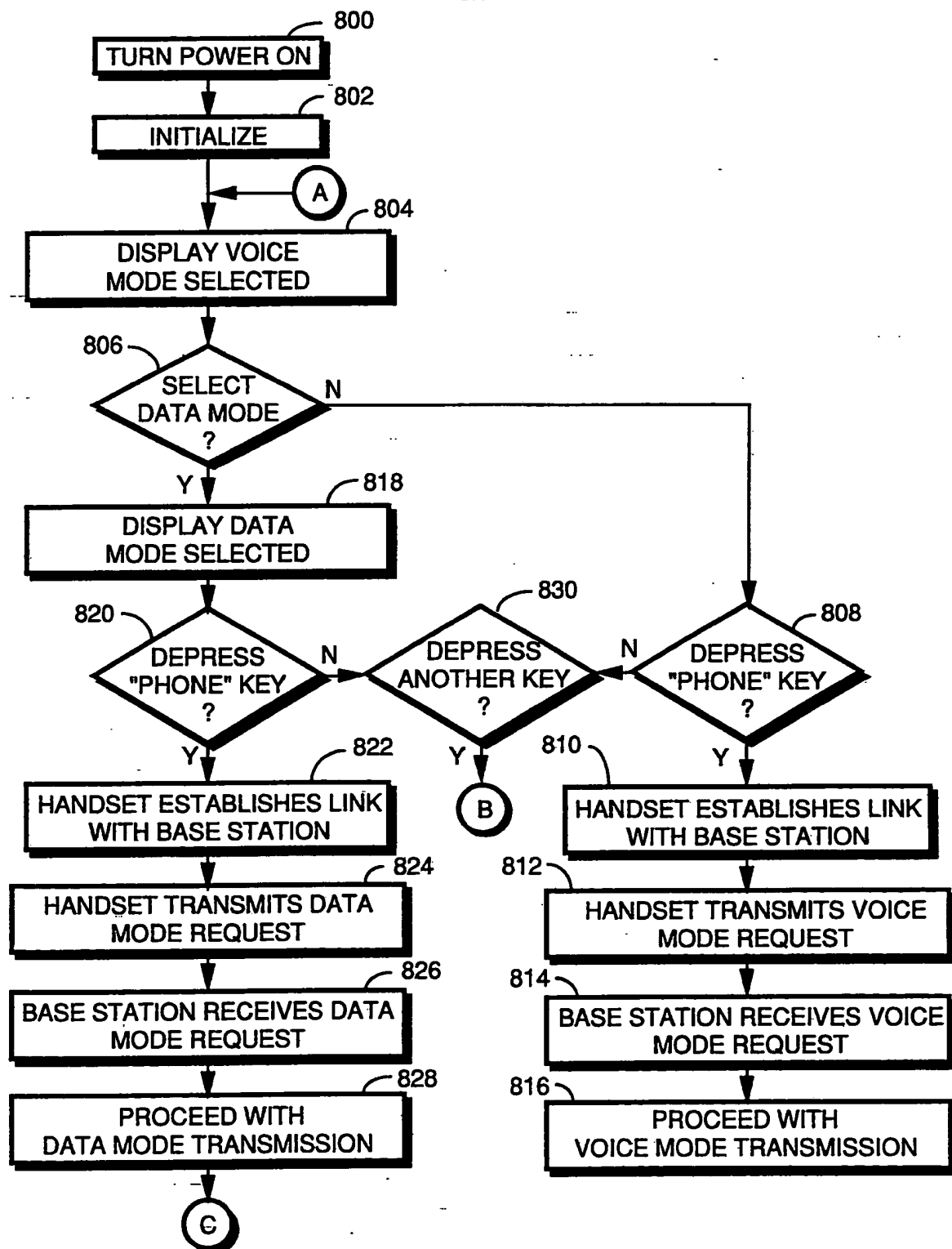
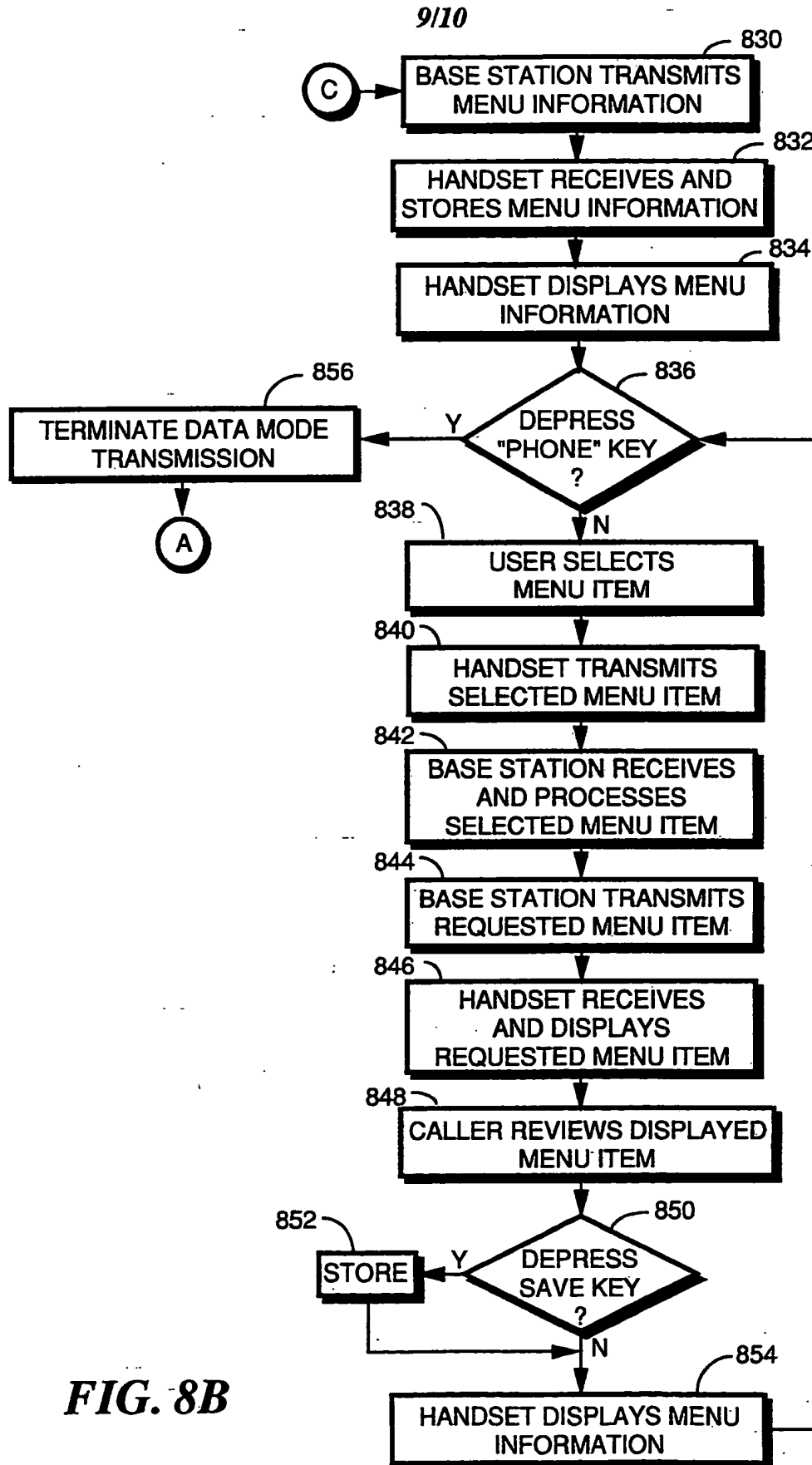


FIG. 8A



10/10

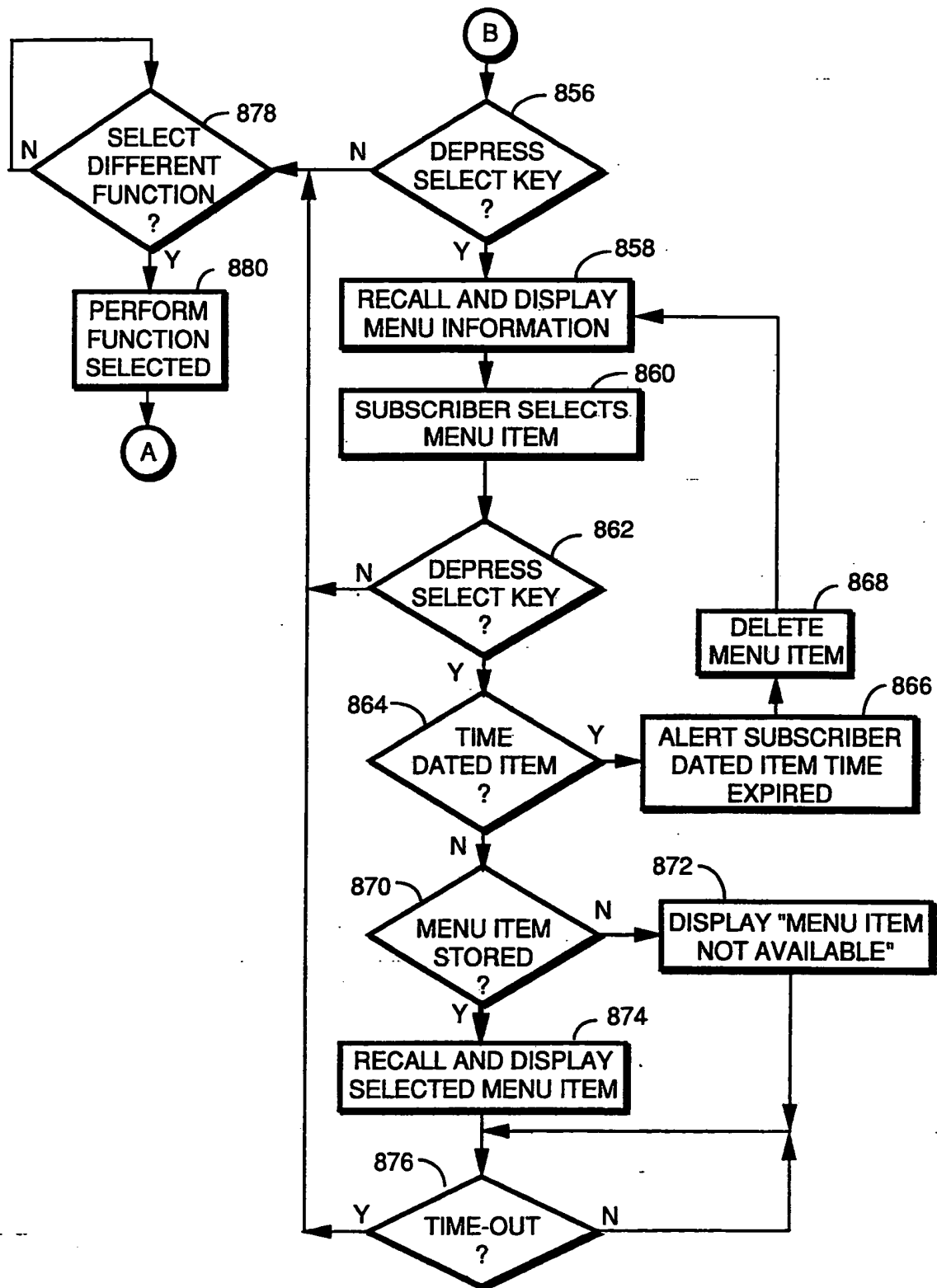


FIG. 8C

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US92/04636

A. CLASSIFICATION OF SUBJECT MATTER

IPC(5) :H04B 7/26

US CL :455/54.2

According to International Patent Classification (IPC)-or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 455/54.1, 56.1, 53.1, 33.1, 89;

340/905, 910, 911

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP,A, 349,470 (Anagnostopoulos) 03 January 1990 (03/01/90) See col. 11, lines 9-40	1-20
Y	US,A, 4,887,265 (Felix) 12 December 1989 (12/12/89) See abstract	1-20
Y	US,A, 4,881,271 (Yamauchi et al.) 14 November 1989 (14/11/89) See col. 2, lines 15-50	1-20
Y	US,A, 4,837,858 (Ablay) 06 June 1989 (06/06/89) See abstract	1-20

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be part of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"A" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

01 SEPTEMBER 1992

Date of mailing of the international search report

23 OCT 1992

Name and mailing address of the ISA/
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Box PCT
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